The Great Plains Gazette

National Weather Service Hastings, NE

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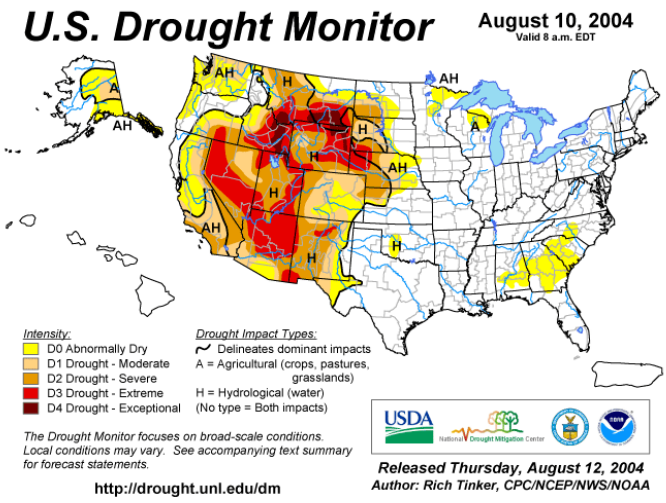
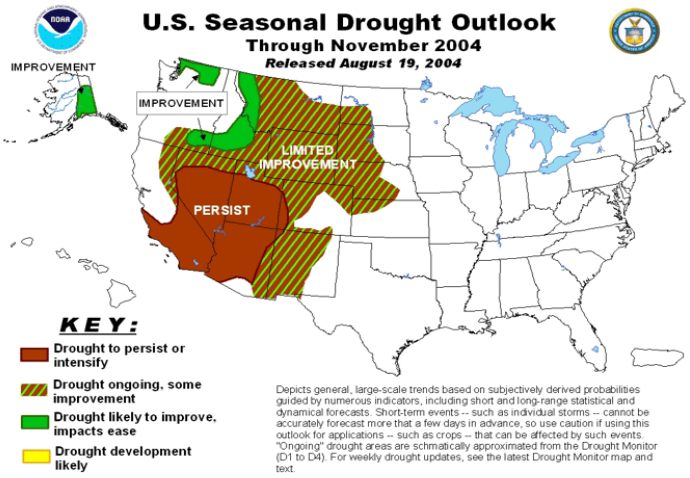
Drought Conditions Persist, Though Forecast Calls For Some Improvement

The High Plains and Central States: Light to negligible rainfall across most of Nebraska and adjacent Kansas generally kept D0H to D2AH conditions intact, but some local fluctuations were noted. Moderate rains of 1 to 3 inches eroded D0AH conditions in parts of eastern and southeastern Nebraska and adjacent Kansas. In contrast, significant rains again evaded south-central Nebraska, where drought classifications generally worsened by 1 category to D1 or D2. Although substantial 3-month rainfall deficits in the Great Plains region (1 to locally 4 inches less than normal) were restricted to parts of north-central and southeastern Nebraska, long-term deficits remain substantial in much of the area. Over the last 5 years, between 10 and 20 inches less than normal precipitation has fallen from south-central South Dakota southward through northern Kansas, with 20 to 30 inch deficits observed in central Nebraska and adjacent areas. For the central tier of Nebraska and parts of northern Kansas, this represents more than a typical year's worth of precipitation missed since early August 1999.

Drought improvement, generally defined as at least a one-category change in the U.S. Drought Monitor's intensity level, is anticipated for the High Plains region from the Dakotas into western Kansas. This area already saw abundant moisture during the first half of July, and more rain is on the way. Nevertheless, full drought relief is not expected in this area during the next few months due to the severity and longevity of the dryness. It would take some 6 to 8 inches of rain to bring the Palmer Drought Severity Index close to normal in Nebraska's Panhandle and in adjacent southwestern South Dakota.



Information and graphics courtesy CPC and NDMC



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Comments and suggestions are always welcome.
Your feedback is very important to us!

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Editor: Stephen Carboni

COOP Corner

Congratulations to All of Our Award Recipients!

Mr. **Lyle Welch** of **Hubbell, Nebraska**, was presented with a **10 Year Length of Service Award** by Steve Carmel from the NWS Office in Hastings. Mr. Welch has provided precipitation and snowfall data to the NWS since January 1, 1994, and has been responsible for maintaining a daily weather log of precipitation data that is published by the National Climatic Data Center, and the High Plains Climatic Center in Lincoln, Nebraska. Lyle also has contacted the National Weather Service during periods of heavy rain and snow, providing up-to-date information.

Mr. **Tom Johnson** (pictured right with mother **Darlene**) of **Osceola, Nebraska**, was presented with a **20 Year Length of Service Award** by Steve Carmel from the NWS Office in Hastings. During periods of heavy rain, snow, or severe weather, Tom has contacted the NWS, providing the latest data possible. He first began taking weather observations in 1972, and has also served as a substitute observer for Viola Wiesman. The entire Johnson family has been involved, with parents Merle and Darlene being vital contributors. The Johnson family has always provided high quality information to the NWS.

Mr. **George Umbarger** (center with wife **Erma**) from 2 miles west of **Genoa, Nebraska**, was presented with a **40 year Length of Service Award** by Steve Carmel from the NWS office in Hastings, Nebraska. He has provided the NWS with daily precipitation totals, snowfall and snow depth data since April 1, 1963. He also frequently provides storm related information, which assists in verifying severe weather warnings and storm verification efforts. George has previously received the two most prestigious awards given in the Cooperative Weather program. He received the John Campanius Holm Award on November 26th, 1979, and the Thomas Jefferson Award on October 27th, 2000.

Mr. Roger Bodtke (left), the Cooperative Weather Observer from 3 miles northeast of **Shelby, Nebraska**, was presented with a **10 Year Length of Service Award** by Steve Carmel, from the National Weather Service office in Hastings. He also received a 10 year service pin. Mr. Bodtke has provided precipitation and snowfall data to the National Weather Service since June 1, 1994. He has been responsible for maintaining a daily weather log of precipitation data that is published by the National Climatic Data Center, and the High Plains Climatic Center in Lincoln, Nebraska. He has also contacted the NWS during periods of heavy rain and snow, providing up-to-date information.

Bruce and Suzanne Lans, river and precipitation observers for **Stamford, Nebraska**, were presented with a **20 Year Length of Service Award** by WFO Hastings Data Acquisition Program Manager Marla Doxey. When there is water in the Sappa Creek, they read the gage on a daily basis and relay the information to the Corp of Engineers and the National Weather Service. Due to the ongoing drought, there has not been much to read in the creek, but their rainfall measurements are very beneficial. They have a beautiful view from their new home northeast of town, which allowed them to keep a close eye on a tornado that passed near Stamford this past May.

COOP Corner

Mr. Clyde Mickelson (center) of **Kearney, Nebraska** was presented with a **10 Year Length of Service Award** on May 27, 2004, by WFO Hastings HMT Larry Wirth (right). Clyde has provided official climatological reports for the Kearney area on a twice daily basis since April 1994. These duties include monitoring NWS owned equipment and maintaining a log of temperature and precipitation data that is published by the National Climatic Data Center. He has also provided valuable information to the NWS during periods of heavy rain, snow and severe weather. His volunteerism has aided Kearney and the NWS by providing part of a collection of data that dates back to 1873.

Norden and Ruth Nutter of **Gibbon, Nebraska** were presented with a **35 Year Length of Service Award** by WFO Hastings HMT Larry Wirth. For the past 35 years, the Nutter's have used NWS and U.S. Geologic Survey equipment to measure the river stage on the Wood River 3 miles east of Gibbon, and to measure and record daily precipitation at their home south of Gibbon. This data is used by the NWS as part of its hydrologic program. During periods of flooding on the Wood River, the Nutter's efforts have proved invaluable to people along the river in eastern Buffalo and Hall Counties. Their reports have also been used during heavy rain, winter storms and for severe storm warning verification.

Ms. Louise Logston, the Cooperative Weather Observer in **Polk, Nebraska**, was presented with a **10 Year Length of Service Award** on Wednesday by WFO Hastings HMT Steve Carmel. Louise has provided precipitation and snowfall data to the National Weather Service since March 11, 1994. She has been responsible for maintaining a daily weather log of precipitation data that is published by the National Climatic Data Center, and the High Plains Climatic Center in Lincoln. She has also contacted the National Weather Service during periods of heavy rain and snow, providing up-to-date information.

Mr. John A. Plock, the Cooperative Weather Observer from 4 miles south of **Shickley, Nebraska**, was presented with a **10 year Length of Service Award** by WFO Hastings HMT Steve Carmel. Mr. Plock has provided precipitation and snowfall data to the National Weather Service since April 13, 1994. He has been responsible for maintaining a daily weather log of precipitation data that is published by the National Climatic Data Center, and the High Plains Climatic Center in Lincoln, Nebraska. John has also contacted the National Weather Service during periods of heavy rain and snow, providing up-to-date information.

Odds and Ends

We'd like to welcome these new observers and wish the best to those who have moved on:

New Observer(s)	Station	Old Observer(s)
Darrol Mitchell	Portis, KS	Jessica Schmidt
Gene Deiter	Hunter, KS	Rick Keller
Lynn and Roger Wilton	Superior, NE	Ed Groves (will continue as backup)

You may have noticed a recent addition to one of our products. Now appearing at the end of the 5 am issuance of the Regional Weather Summary is a section devoted to past weather events and weather folklore. While our database of past weather is quite good, there are a few gaps that we'd like to fill. If you have an interesting weather story or know some weather folklore you'd like to share, send us a letter or an e-mail!

Ed Groves Retires After 47 Years of Observing

Ed Groves receives the Hagemeyer Award in August 2002. Pictured from left to right are then WFO Hastings MIC Steven Schurr, backup observer Arnold Miller, Ed Groves, and WFO Hastings DAPM Marla Doxey.

Many years ago, Fred Bossmeyer, the owner of a Superior hatchery, kept track of the local weather conditions. Fred Troudt who was a young Superior businessman, saw a rain gauge beneath Bossmeyer's porch and commented about how little rain would reach a gauge in that location. Bossmeyer offered to give the gauge to Troudt, so Fred took the gauge and began sending Superior weather observations to the NWS. When Fred entered into military service during World War II, Adam Troudt became the weather bureau's Superior observer. In July 1957, as his health was failing, he wanted the weather observation duties to remain in the family, and asked his brother-in-law, Ed Groves about taking on the responsibility. Ed agreed. "It wasn't something I had wanted to do," Groves said, "but I guess I just got hooked on it."

Mr. Groves was born on a farm northeast of Bostwick on September 15, 1914 and moved to Superior March 1, 1915. He graduated from Superior High in 1932. He helped his dad with the pool hall business known as the Smoke House. On September 1, 1936, Groves took a job with Texaco working with a seismological crew doing oil exploration. "What it amounted to was subsurface mapping, we used dynamite and instruments to gage the underground strata so they would know where to drill for oil," explained Groves. Mr. Groves worked for Texaco for 10 years. He married his high school sweetheart, Eunice Troudt, on Valentines Day, 1938, and she traveled with him to locations in Kansas, Illinois, Ohio, Pennsylvania, Wyoming and Oklahoma. In 1946 they returned to Superior. Groves worked at the Smoke House with his dad, until the elder Groves retired in 1953. Ed continued to operate the business until 1980.

Ed Groves has served as one of the managing trustees of the Brodstone Memorial Hospital Association and on the Superior Board of Public Works. He was employed in the Nuckolls County Assessor's Office for 10 years, two as deputy and eight as the County Assessor. He also served for a quite lengthy period of time on the St. Joseph's Catholic Church bingo committee.

"The weather observer's job is a pretty confining job", Groves said. "You are asked to take observations at 7 AM and 7 PM. I couldn't have done it without good backups, Arnold Miller and Eynner Andersen." A cooperative weather observer is important to Superior because of the community's proximity to the Republican River. The precipitation report lets those downstream know what to expect from the river. After a rainfall event, Groves had to report to the NWS office in Topeka, Kansas three times a day until no precipitation had fallen for 24 hours.

Methods of reporting have changed significantly during his 47 years at the job. His reports changed to being entered electronically and sent directly into a computer. He has kept copies of all his observations and offered them to the publisher of the Superior Express newspaper for safe keeping. Ed said he was compelled to retire because of a knee problem which limits his mobility, though he will continue as the backup observer. Roger and Lynn Wilton of Superior have assumed the duties of being the primary cooperative observers.

Ed Groves has been the recipient of the highest awards given to Cooperative Weather Observers by the NWS. He has won the John Campanius Holm award, and was also the proud recipient of the Thomas Jefferson award. He also received the Richard H. Hagemeyer Award in 2002, for his longevity as a Cooperative Weather Service observer and the quality of his observations.

Kearney County Fair

Meteorologists Jeff Braun and Cindy Fay, and Science and Operations Officer, Rick Ewald promoted the National Weather Service (NWS) at the Kearney County Fair in Minden, Nebraska from July 18 through July 21. The NWS booth was a hit with the public, and featured a supercell thunderstorm model (pictured left)along with the 2004 storm spotter presentation. Children enjoyed the hands-on activities of producing thunderstorm sounds with a rain stick and thunder tube. Fair-goers tested their luck by entering a drawing to win an All Hazards NOAA Weather Radio scanner, which was donated with contributions from the NWS Hastings staff. The booth targeted all age groups by promoting NWS web sites and local office information, including safety brochures, cloud posters, and coloring books.

Many people remarked how they utilize the WFO Hastings web site all the time for their weather information, or commented on their reliance on All Hazards NOAA Weather Radio for warning and forecast information. One gentleman even wondered how the NWS remains so calm while broadcasting tornado warnings, as he hadn't realized the broadcast was automated with computer voice synthesis.

Water Jamboree

Meteorologists Cindy Fay and Mike Moritz recently taught over 300 fourth, fifth and sixth grade students about weather and the environment at the 2004 Water Jamboree on April 28 and 29 at Harlan County Reservoir near Alma, Nebraska.

The two day event was sponsored by the Tri-Basin Natural Resources District and six other state and federal organizations from Kansas and Nebraska. This was the 12th year for the Water Jamboree and the 4th year WFO Hastings has participated. The Water Jamboree emphasizes the interdisciplinary water activities of water quality, conservation, the hydrologic cycle and environmental awareness.

Cindy and Mike coordinated an outdoor "Weather and the Environment Scavenger Hunt" for thirteen groups of students from area schools. Students were divided into four groups and were sent off to measure temperatures within the campground, and complete questions relating to weather and environmental conditions. The students searched for items such as "something that reflects sunlight" or "something that would make snow melt." The scavenger hunt challenged the students' critical thinking abilities, and promoted teamwork and organizational skills amongst the kids. Once all the groups returned with their completed scavenger hunt, Cindy and Mike reviewed each group's answers and bag contents. The groups which had the most correct answers and showed the greatest initiative in filling their bag were given a small "grab bag" prize as a reward for their accomplishments.

The two day event also highlighted the incredibly variable weather of the Central Plains. The first day of the event, Cindy enjoyed warm and windy conditions with temperatures topping 90 degrees. The second day, Mike braved a stiff 20 mph north wind, drizzle and temperatures hovering near 40 degrees.

Mark Your Calendars! Staff members from WFO Hastings will man a booth at Husker Harvest Days in Grand Island, Nebraska from September 14-16.

May Lives Up to Reputation as the Climatologically Most Active Month for Severe Weather

Irrigation pipe and debris from destroyed outbuildings was strewn across a field near Cushing.

The first tornadoes of the month touched down on the afternoon and evening of the 16. The storms initially began to form across western Nebraska and Kansas ahead of a dry line, but as they moved into a much more favorable environment, the storms rapidly became severe by early evening. Large hail and damaging winds were initially the main threats from the storms, however as the thunderstorms moved into a highly sheared environment near a warm front, conditions became quite favorable for the formation of tornadoes. Several tornadoes were reported during the evening hours, primarily across Sherman and Howard counties.

Twisted irrigation pivot thrown into a utility pole in Clay County.

One of the worst severe weather outbreaks in recent years struck south central Nebraska the afternoon and evening of May 22. No less than 17 different tornadoes rolled across south central Nebraska. Dozens of homes were damaged and a few completely destroyed. Over 250 center irrigation pivots were damaged or destroyed in south central Nebraska alone. Large hail and strong straight-line winds of up to 80 mph also wreaked havoc on the region. Several million dollars in property damage was reported. Hundreds of power poles were snapped resulting in dozens of miles of downed electrical line.

The vast majority of property damage occurred in Adams, Clay, and Thayer counties. The tornadoes that passed through these counties were assigned an F2 rating on the Fujita scale based on this damage.

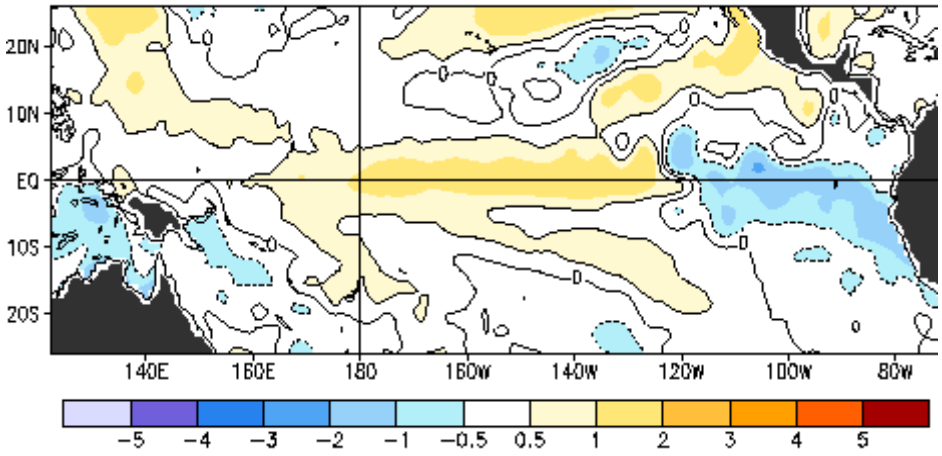
A tractor was picked up by the tornado and hurled on top of an unfortunate vehicle.

Salvaging what is left from this house after the roof was removed during the storm.

As a cold front sliced across south central Nebraska on May 24, a supercell thunderstorm developed along the front and moved southeast across Nuckolls and Thayer counties. The supercell became a prolific tornado producer, with almost a dozen tornadoes having been reported. With rainfall from the thunderstorm limited to a small area, the tornadoes were visible throughout the region by spotters, storm chasers and the public. At one point, three tornadoes were on the ground at one time in southwest Thayer county, one of which severely damaged two farmsteads.

Possible El Niño This Winter

El Niño is a disruption of the ocean/atmosphere relationship in the Pacific Ocean that can have significant impacts on global weather patterns. As eastern Pacific equatorial ocean temperatures rise, deep tropical convective activity moves eastward with the warmer temperatures, and surrounding weather patterns can be altered.



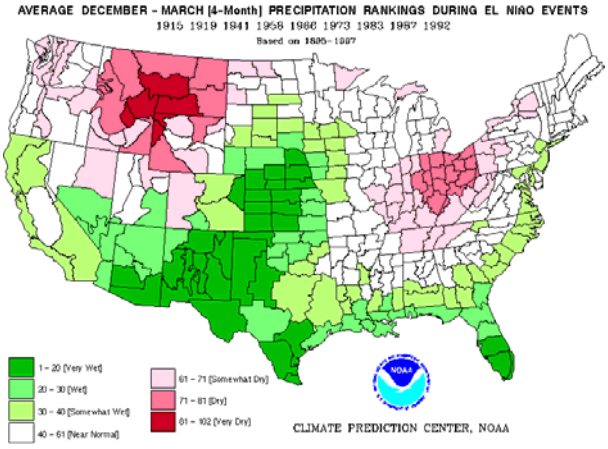
Equatorial Pacific Sea Surface Temperature (SST) Anomalies: 07-28-04

On August 5, the Climate Prediction Center announced that the El Niño conditions are expected to return during the next 3 months. Sea surfaces temperatures (SSTs) over the central Pacific Ocean increased substantially during July 2004. The recent increase and eastward expansion of the warmer water in this region indicate the possible early stages of a warm episode. El Niño conditions exist when equatorial Pacific Ocean temperatures equal or exceed 0.5° C above normal for three consecutive months.

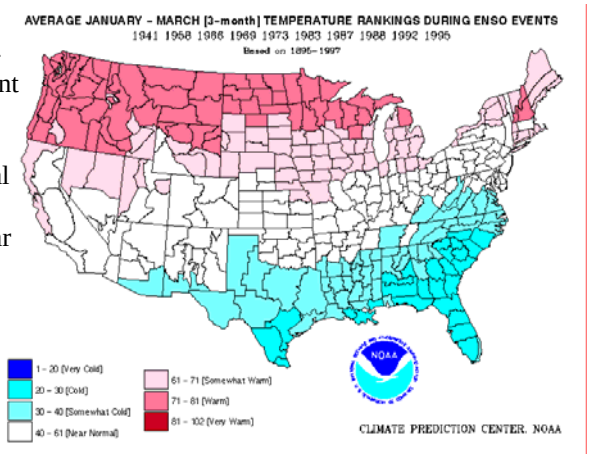
SST anomalies of +0.5° C were found in the Pacific equatorial waters between longitudes 160° E and 120° W, with temperature anomalies greater than 1° C extending from 125° W to 180° W.

A key component to the eastward spread of warmer ocean temperatures is the decline of the easterly trade winds (which generally push the warmer surface water westward, allowing cooler ocean water below to rise to the surface). This can result in sea surface levels being over a meter higher in the western Pacific than in the eastern Pacific Ocean. During mid-June through early July, the easterlies weakened in many areas of the equatorial Pacific. This has allowed the higher ocean surface waters in the west to move eastward in what is known as a "Kelvin Wave". Such waves are unnoticeable to the human eye, but they have a large impact on the ocean/atmosphere relationship. This Kelvin Wave, which ushers in warmer waters, is expected to reach the South American coast by the end of this month.

Some of the strongest El Niño years (with eastern Pacific ocean temperatures greater than 5° C of normal) can have significant impacts on south central Nebraska and north central Kansas. Below is an average impact for precipitation during the months of December through March and average temperatures for the months of January through March. As can be seen in the images, an El Niño event can bring a wet winter but with temperatures only near normal for south central Nebraska and north central Kansas. However, right now it's too early to determine the strength of this possible, upcoming El Niño event. The current forecast is only for a 50% chance of it happening at all.



Prior winters accompanied by an El Nino event proved very wet (left) for south central Nebraska and north central Kansas. Temperatures (right) ranged from near normal to somewhat warm.



Story contributed by Lead Forecaster Aaron Johnson

What Are Those Strange Looking Clouds?

View from west side of Hastings

View from WFO Hastings

A relatively rare cloud phenomenon paid a visit to much of south central Nebraska on the afternoon and evening of June 12, as mammatus clouds blanketed a large portion of the area. Mammatus clouds are the product of sinking air in the atmosphere, and are most commonly viewed when thunderstorms are in the area. Thunderstorms are born when air begins to rise rapidly, creating a thunderstorm updraft that leads to cumulonimbus cloud development. Eventually, this rising air reaches a point where it can no longer rise, and the rising air spreads out, forming the anvil of the thunderstorm. It is in this anvil that the air eventually begins to cool and becomes colder than the surrounding air, forcing it to sink. If the moisture content of the sinking air is high and the cloud drops are large in size, they take much longer to evaporate. The clouds are therefore able to maintain themselves for a longer period of time, resulting in a unique pattern of pouch-shaped clouds known as mammatus clouds.

Mammatus clouds are a good indicator of the intensity of a thunderstorm updraft. If the clouds are rather small and do not extend downward much from the cloud base, the updraft, while intense enough to create a thunderstorm, is likely not very strong. On the other hand, if the mammatus clouds extend well below the anvil base (like those on June 12), it is likely that the thunderstorm updraft is quite intense. In this case, the thunderstorm updrafts at the time were located over north central Kansas, and these storms were producing very large hail at the time (indicative of a very strong thunderstorm updraft).

Photos and Story by Meteorologist David Lawrence

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For more weather information, check us out on the internet at www.crh.noaa.gov/gid